Title: Geodetic and Space VLBI Observations of EGRET Blazars

Abstract:

I will present VLBI observations of six blazars detected by the EGRET telescope on the Compton Gamma-Ray Observatory: 0202+149 (4C+15.05), 0235+164, CTA 26 (0336-019), 1156+295 (4C+29.45), 1606+106 (4C+10.45), and 1611+343 (DA 406). The VLBI data were taken from the Washington VLBI correlator's geodetic database. A total of 108 new VLBI images were made of these six sources at two frequencies (8 and 2 GHz) and many epochs. Through measurements of the proper motions of the jet components in these sources, three new superluminal sources (CTA 26, 1606+106, and 1611+343) were discovered, and a previously measured very high superluminal speed for 1156+295 was corrected. The components in 0202+149 were stationary; this, along with other properties, identifies this source as a compact F double (Conway et al. 1994). These sources all have apparently bent jets. Non-radial motion of components was detected in CTA 26 and 1156+295. No correlation was found between VLBI component ejections and γ-ray flares, and upper limits were derived for the speeds of any possible components correlated with the γ-ray flares in CTA 26, 1156+295, and 1606+106. A comparison of the misalignment angle distribution of the EGRET sources to the distribution for blazars as a whole (Xu et al. 1994) showed that EGRET sources do not preferentially belong to the aligned or the misaligned population. Twenty new VLBI component speeds were measured, approximately doubling the available sample size for studies of EGRET source superluminal motions. A lower limit to the Doppler beaming factor for each of these sources was also estimated, and a comparison of the average values of these apparent velocities and Doppler beaming factors for the EGRET and non-EGRET blazars revealed no differences within the statistical uncertainties. Thus no indication was found that EGRET blazars are any more strongly beamed than their counterparts which have not been detected in γ-rays.

In addition, I will also present recent 5 GHz VSOP images of the EGRET blazars 3C279 and Markarian 421.